Mass inflow history of satellite halos around a dwarf galaxy

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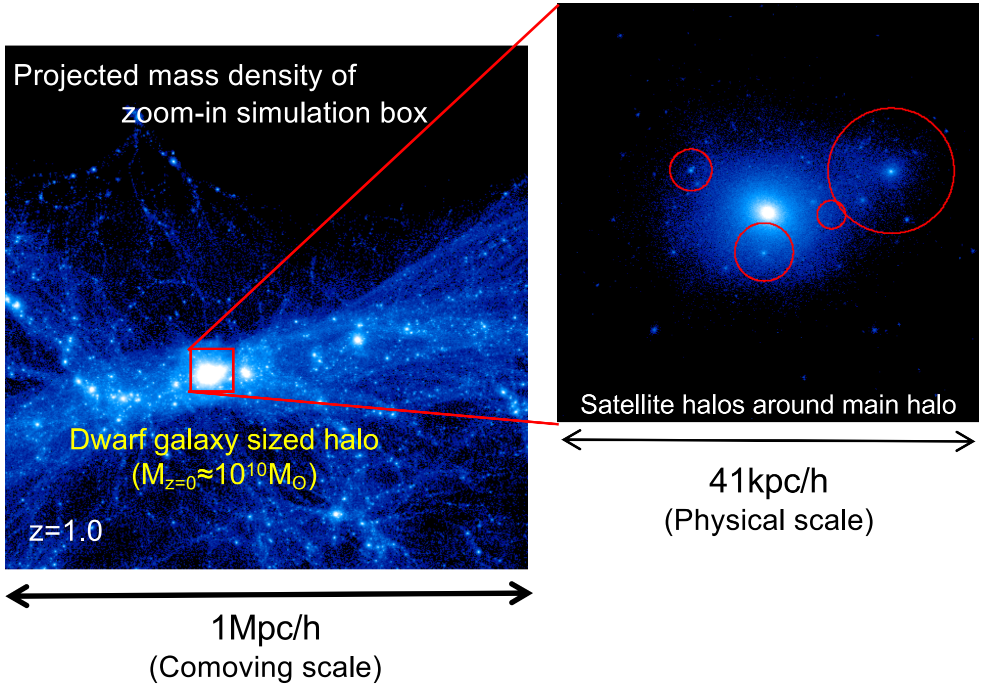
- We aim to investigate **mass inflow history of satellite systems around three different dwarf galaxy** in a cosmological context by high-resolution hydrodynamic zoom simulation.
- We aim to show how mass inflow history of halos are affected by **evolutionary path, stellar feedback, interaction with other halos and also different kinematics.**

Code

- We modified GADGET-3 to include various baryonic physics (Springel 2005; Shin et al. 2014).
  - **Radiative Heating & Cooling** (Ferland et al. 1998)
  - **Reionization** at $z_{reion} = 8.9$ (Haardt & Madau 1996)
  - **UV Shielding** $(n_H \geq 0.014 cm^{-3})$ (Sawala et al. 2010)
  - **Star formation** (Saitoh et al. 2008)
  - **Supernova feedback** (Okamoto et al. 2008)

Resolution

- Particles mass : DM: $4.17\times10^3 M_\odot$, Gas: $7.92\times10^2 M_\odot$



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Mass inflow history

- We measure how many **matters fall into the satellite halos per unit time** (= mass influx).

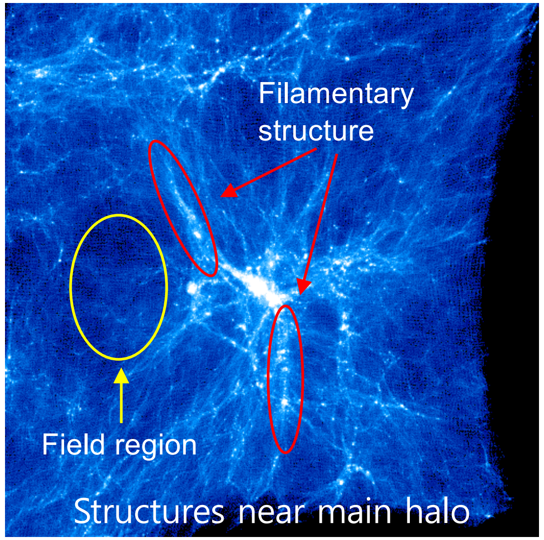
Categorization of satellite halos

Type 1

- **Constant or increasing DM/gas mass influx** during floating to the main halo
- 17 of 25 reside along **the filamentary structures**.

Type 2

- **Constant or decreasing DM mass influx** during floating to the main halo
- **Interrupted or Decreasing gas mass influx** during their evolution outside main halo
- 12 of 14 come from **the field region**.



The mean properties of halos of each type

	$M_{tot}(z=z_{in})$ [$M_\odot$]	Mass influx [$M_\odot$/Myr]	N_{merger}	Age($z>z_{in}$) [Myr]
Type 1	1.36e+08	9.04e+04	115	1,020
Type 2	6.98e+07	2.87e+04	76	2,238

→ **Growth process outside of the main halo is important to the evolution of the satellite halo.**

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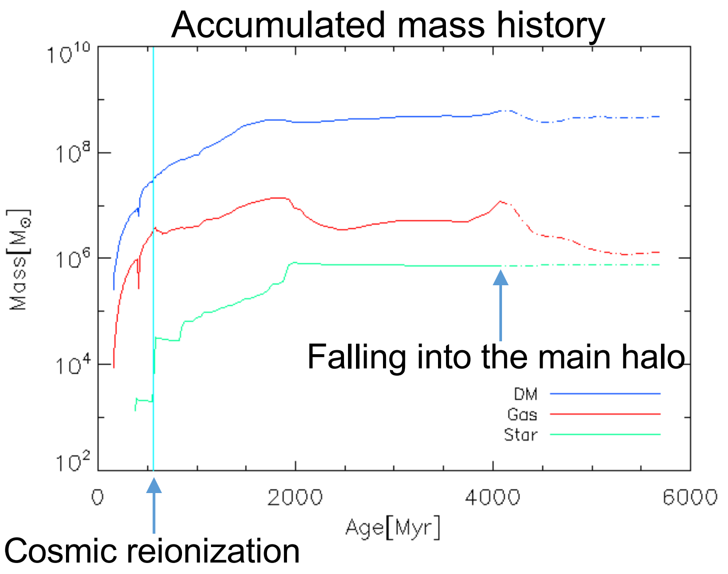
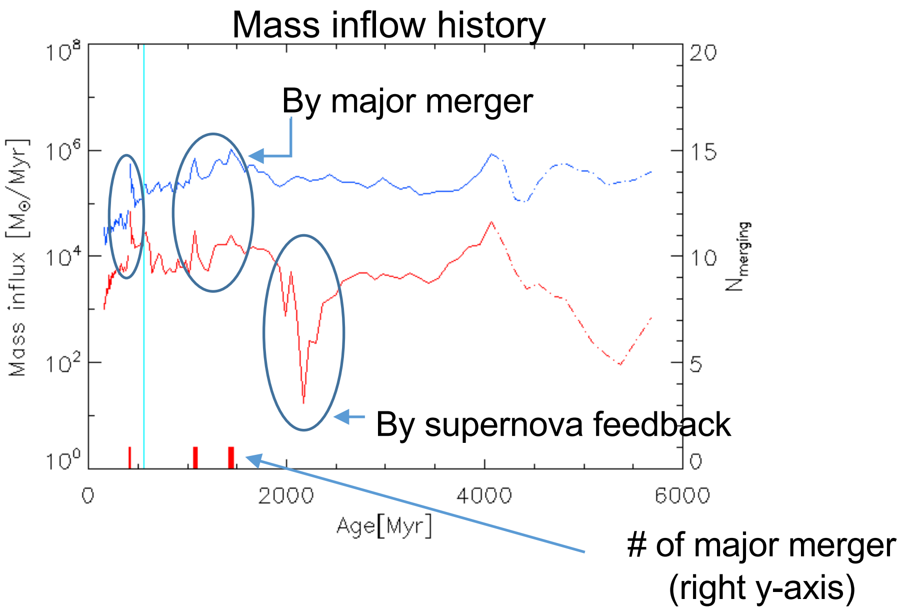
Type 1 halos





Type 2 halos